

Adsorbent Media for Efficient Removal of Arsenic, Radioactive Materials, and Heavy Metals



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Outline

- ✓ Company
- ✓ Products:
 - i. ISorb
 - ii. Nanolit
- ✓ Tests and experimental setup
- ✓ Results and Graphs



The Company

- Reno, NV based company.
- Collaboration with European and Asian Business Partners
- Products have been successfully applied in Europe and Asia
- Testing was done at the University of Nevada, Reno with highly challenging local well waters
- During testing we compared our products to other filter media products available in the market
- Our adsorptive filter media products are competitive and reliable solutions for treatment of drinking and industrial waters.

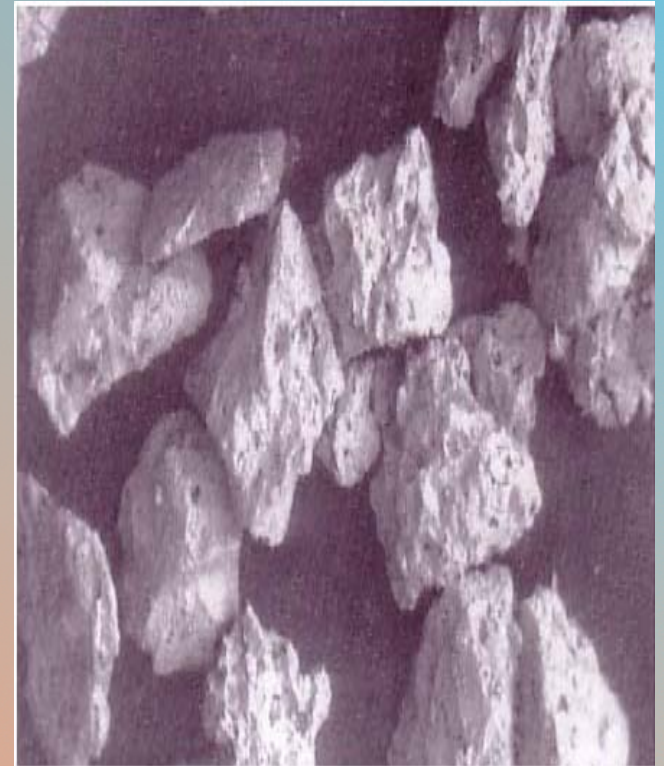


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ISorb

Ferric hydroxide based filter media for the effective removal of arsenic and other contaminants from drinking water

- Removes arsenic, phosphate, sulfide and heavy metals from drinking water to comply with the new EPA standards
- Low capital and operating costs
- Minimum Water wastage
- Easy disposal of spent material
- Unmanned system operation



ISorb - Product Specifications

Material	: Ferric Hydroxide
Appearance	: Granular
Chemical Formula	: Fe (OH)_3
Ferric Hydroxide Content	: At least 94 %
Color	: Coffee-brown
Bulk Density	: $0.5 \pm 0.050 \text{ g/cm}^3$
Specific Surface	: At least $300 \text{ m}^2/\text{g}$
Porosity	: At least 70 %
Particle Sizes	: 0.15 - 1.0 mm
Solubility	: Insoluble in Water

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Nanolit

For the effective removal of radioactive elements, arsenic and other heavy metals

- 98% of Titanium Oxyhydrate $\text{TiO}(\text{OH})_2$
- Removes contaminants such as arsenic, Antimony, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Tungsten, Uranium, Radium, Molybdenum, Nickel and other heavy metals from ground-, surface- and leakage-water sources
- Already applied in Germany

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Nanolit- Product Specifications

Material : Titanium Oxyhydrate

Chemical Formula : $\text{TiO}(\text{OH})_2$

Content of $\text{TiO}(\text{OH})_2$: 98 %

Color : White

Bulk Density : $0.45 \pm 0.050 \text{ g/cm}^3$

Appearance : Granular

Specific Surface : At least $500 \text{ m}^2/\text{g}$

Porosity : At least 65 %

Particle Size : 1.0 – 2.0 mm

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Testing Conditions

As (ppb)	pH	F (ppm)	Silica (ppm)	TDS (ppm)	Turbidity (NTU)	Iron (ppm)	Mn (ppm)	Sulphate (ppm)	Nitrate (ppm)
~45	~7.6	0.5	~65	~680	~1.2	~0.09	~0.05	~290	~1.5

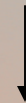
1. Critical levels lead to early exhaustion of the media
2. Tested 5 different adsorptive media including Nanolit and ISorb
3. Three different testing conditions:

i. Critical Well Water

ii. Buffered pH

iii. Distilled Water

(WORST CASE)



(BEST CASE)

Experimental Setup



$L = 11.8''$

$D = 1''$

Height of Media $\sim 5.5''$

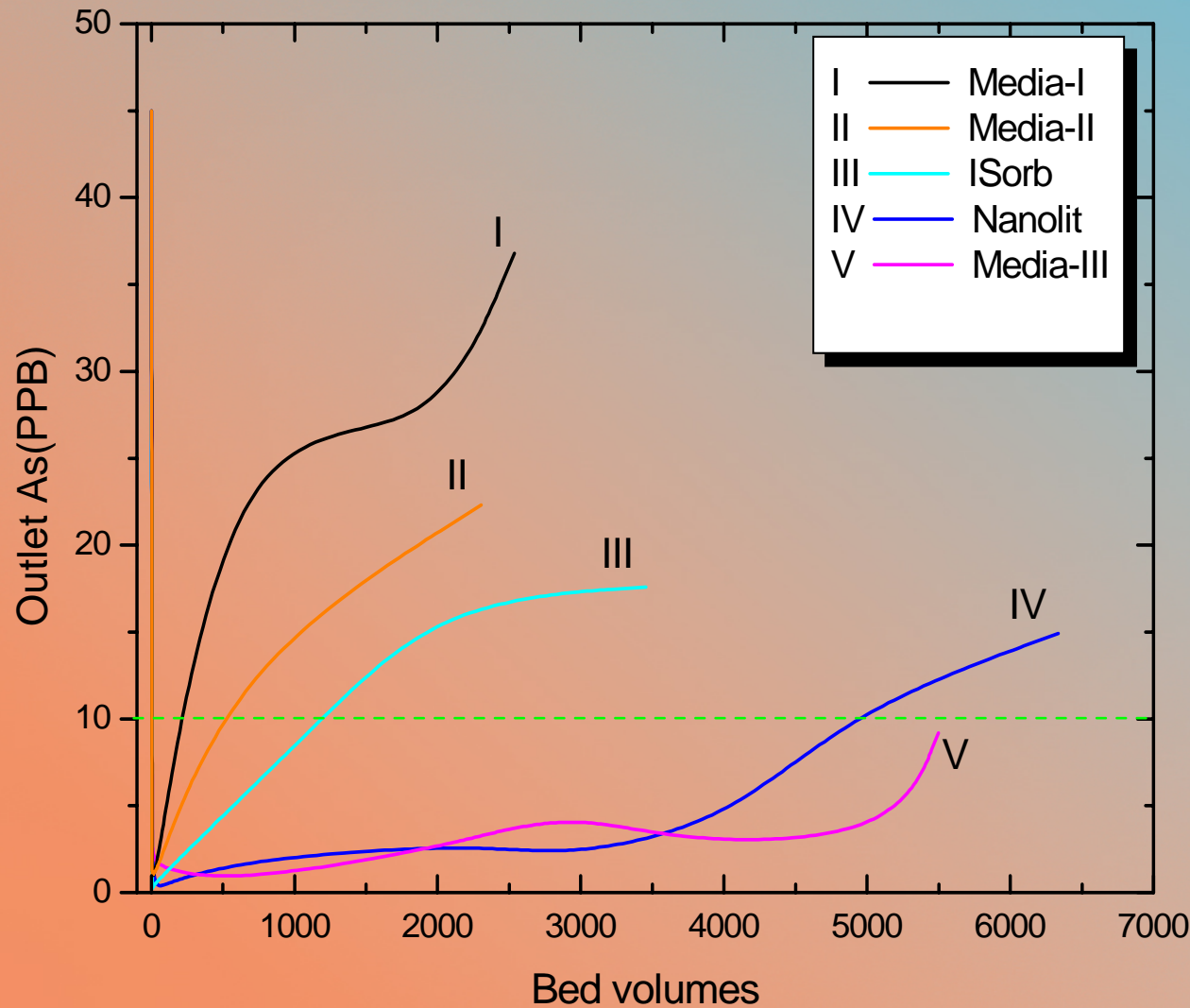
Flow Rate: 10ml/min

Motor Speed: 350 rpm

Sand Filter

Results

Inlet arsenic concentration ~ 35 - 45 ppb pH~ 7.1 - 8.1



Media I – Lanthanum based

Media II & III- Ferric Hydroxide based

ISorb- Ferric Hydroxide based

Nanolit- Titanium Oxyhydrate based

Measurement Method: EPA 200.8

Accuracy of results: 98%

Thank You !!

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